

Treasure Valley Vehicle Inspection and Maintenance Programs

Annual Review

State of Idaho
Department of Environmental Quality
December 2019



Summary

This report summarizes the effectiveness of the Vehicle Inspection and Maintenance (I/M) programs in both Ada and Canyon Counties for calendar year 2018. Idaho Code §39-116B(5) states “The department shall annually review the results of the vehicle inspection and maintenance program. The review shall include, among other things, an estimate of the emission reduction obtained from the number of vehicles that initially fail the test and then pass after maintenance.”

Background

In 2008, Idaho Code §39-116B, “Vehicle Inspection and Maintenance Program,” was signed into law. The statute sets vehicle emissions testing requirements in areas with compromised air quality in which motor vehicle emissions constitute one of the top two pollution sources. Ada and Canyon Counties meet the criteria specified in the law. The design value for ozone exceeds 85% (Figure 1) of the National Ambient Air Quality Standard (NAAQS) and vehicle emissions constitute one of the top two emissions sources contributing to ozone concentrations in the Treasure Valley (Figure 2).

Ada County’s vehicle emissions testing program has operated since 1984 and is managed by the Air Quality Board. In 2010, vehicle emissions testing became a requirement in Canyon County and the city of Kuna in Ada County. As of February 2015, the Idaho Department of Environmental Quality (DEQ) contracts with Applus Technologies Inc. to operate the program in Canyon County and Kuna according to Idaho Code §39-116B(3).

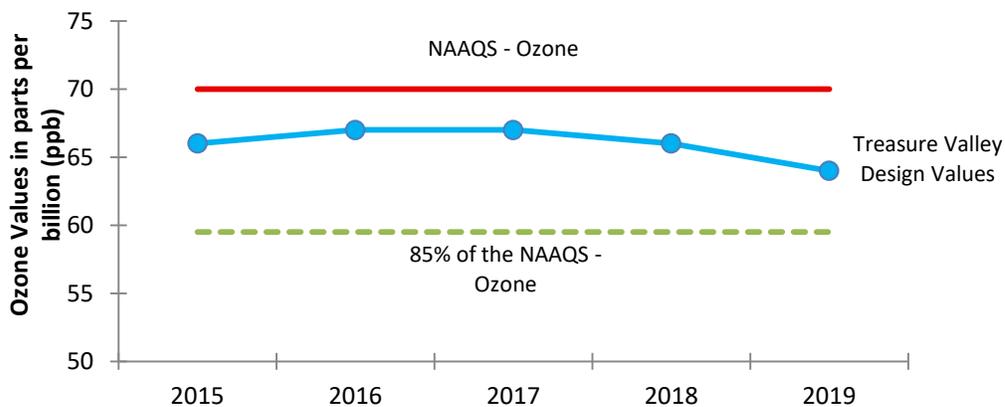


Figure 1. Ozone levels in the Treasure Valley. Design values (ppb): 66 (2015); 67 (2016); 67 (2017); 66 (2018); 64 (2019, preliminary data). Days flagged for exceptional events have been removed.

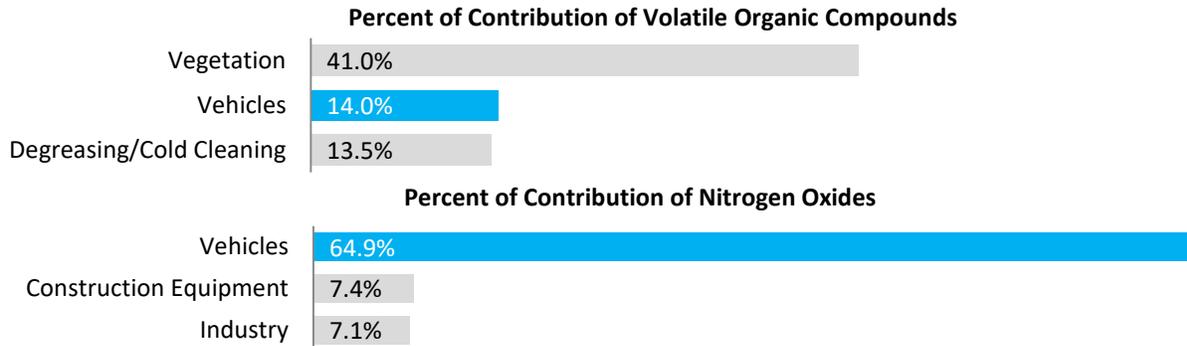


Figure 2. Ozone precursor emissions by source. The top three sources for nitrogen oxides (NO_x) and volatile organic compounds (VOCs) in the Treasure Valley and their percentage of contribution. Vehicles are the top contributor to NO_x in the Treasure Valley at 65% and second only to biogenic sources for VOCs at 14%.

Program Effectiveness

The effectiveness of an emissions testing program is described in terms of failure rates, compliance rates, and estimated emission reductions. Table 1 shows the failure, compliance, and waiver rates for calendar years 2015–2018, along with the total number of vehicles tested.

Table 1. Failure, compliance, and waiver rates.

	2015		2016		2017		2018	
	Ada	Canyon	Ada	Canyon	Ada	Canyon	Ada	Canyon
Vehicles tested	135,862	51,479	129,333	54,115	135,861	52,899	142,568	52,356
Failure rate	9.11%	8.60%	9.25%	10.41%	9.4%	11.53%	8.67%	12.08%
Compliance rate ^a	96.6%	97.78%	96.84%	96.50%	96.48%	96.53%	96.58%	96.03%
Waiver rate	0.18%	0.50%	0.29%	0.61%	0.20%	0.67%	0.19%	0.76%

a. The calculations for the Canyon County compliance rates were updated to consistently reflect the US Environmental Protection Agency’s latest MOVES model.

The *failure rate* reflects the percentage of tested vehicles that fail the initial test and are required to either obtain repairs and pass a retest or obtain a waiver due to financial hardship or repair costs.

The *compliance rate* reflects the percentage of vehicles due for testing that have passed an emissions test, including after initially failing, or have received an approved waiver.

The *waiver rate* is the percentage of vehicles that obtain an approved waiver. The I/M programs in Ada and Canyon Counties offer two forms of waivers to assist motorists struggling with compliance: repair waivers and financial hardship waivers. A repair waiver is granted to individuals with vehicles that initially fail an emissions test, meet the minimum amount required on emissions-related repairs, and fail a follow-up emissions test after the repairs. A hardship waiver is granted to individuals who provide proof that completing the repairs would create a financial hardship.

When Idaho Code §39-116B was enacted in 2008, emissions modeling was conducted to estimate the annual ozone precursor emission reductions that would be achieved by the two-county I/M program. DEQ uses the latest emissions model to evaluate emission reductions to assess the continued benefit of the I/M program. The emission reductions are determined by modeling the vehicle emissions of failing vehicles that are repaired and then obtain a passing test.

Figure 3 shows the estimated emission reductions from repairing noncompliant vehicles for those same calendar years, along with initial estimates from 2008. These results are consistent with other I/M programs throughout the United States. As the programs mature and older vehicles are replaced with newer vehicles required to meet more stringent federal emission standards, the emission reductions from the I/M programs will continue to decrease (Figure 3).

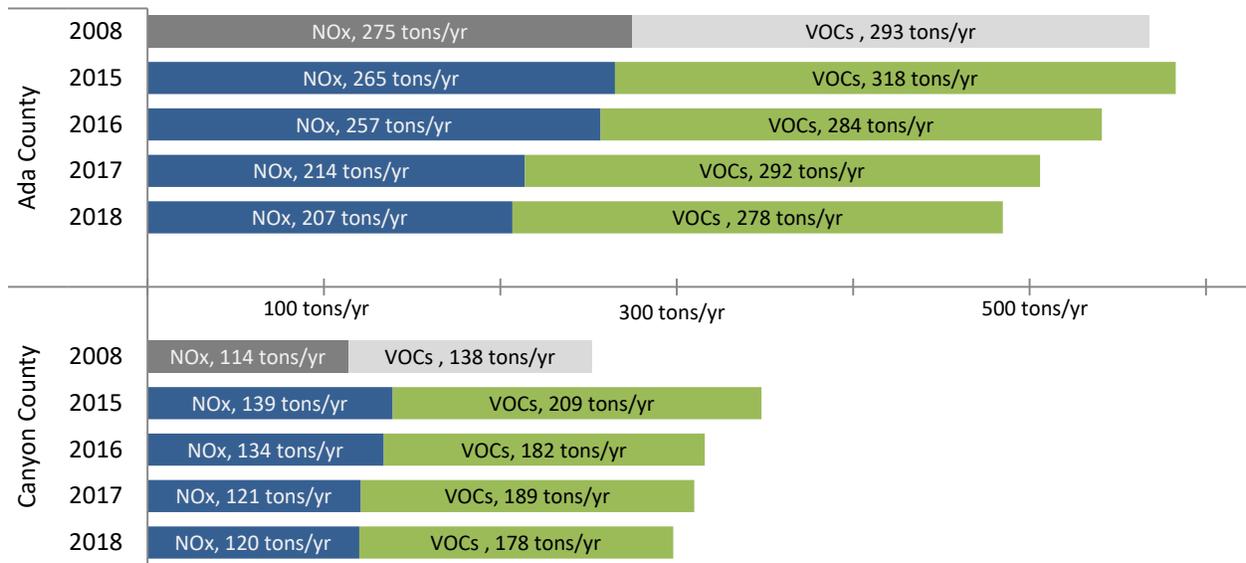


Figure 3. Annual ozone precursor-modeled emission reductions by county.

Program Review

Based on the failure rates identified in Table 1, around one in every ten vehicles failed the initial emissions test. Furthermore, national studies show that one in five vehicles have emission-related repairs before the initial test.

Modeling results continue to show that by requiring properly maintained and repaired vehicles, the I/M programs reduce the effects of ozone in the Treasure Valley by lowering motor vehicle NOx and VOC emissions. Combined the emissions testing programs in Ada and Canyon Counties continue to provide emission reductions comparable to those modeled at the inception of Idaho Code §39-116B (Figure 4).

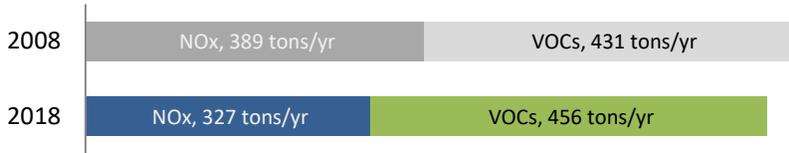


Figure 4. Treasure Valley combined annual ozone precursor-modeled emission reductions.
 The comparison between the 2018 emission reductions for Ada and Canyon Counties and the 2008 proposed reductions.

While the design value for ozone has declined over the last two years, it remains at over 90% of the NAAQS (Figure 2). The design values assume the best-case-scenarios with days flagged for exceptional events (i.e., wildfires) removed. In addition to reducing ozone, an I/M program helps to reduce wintertime fine particulate matter (PM2.5). In the Treasure Valley, PM2.5 levels are largely the result of NOx combining with ammonia to form ammonium nitrate, referred to as a secondary aerosol. These results indicate that an I/M program is effective at improving air quality.

As part of the ongoing air quality public awareness and outreach program, seasonal public service announcements (PSAs) continue to be broadcasted in the Treasure Valley. Additionally, DEQ uses billboards and regional transit bus signs to disseminate information. The PSAs and signage offer actions the public can take to improve air quality, including specific motor vehicle maintenance suggestions (e.g., attending to a vehicle’s check engine light, complying with emissions testing).

Conclusion

The I/M program continues to be an effective method for reducing ozone precursor emissions. Modeling results continue to show that the I/M programs in Ada and Canyon Counties provide emissions reductions comparable to those originally estimated in 2008 (Figure 4). These results confirm the determination by the Treasure Valley Air Quality Council that the two-county testing program is one of the most effective and proactive control measures available to reduce ozone precursors.